IN THE UNITED STATES PATENT OFFICE

In re Application of	:	Robert G. Schultz
Serial Number	:	09/677,569
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For	:	Computer Motherboard Architecture with Integrated DSP for Continuous and Command and Control Speech Processing
Examiner/Art Unit	:	Qi Han/2654

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APPEAL BRIEF

In response to the Final Office Action mailed June 09, 2004 and the Notice of Appeal mailed August 23, 2004, the period for response extending until October 25, 2004 (October 23 being a Saturday), Applicant submits this Appeal Brief under the provision of 37 C.F.R. § 1.191. Filed herewith is a request under 37 C.F.R. § 1.136(a) to extend the period for filing a reply in the subject application by one (1) month. Included with this Brief is the required fee under 37 C.F.R. § 41.20(b)(1). Applicant claims small entity status under 37 C.F.R. § 1.27.

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Real Party in Interest

Xybernaut Corporation is the real party in interest in the present application. The inventor, Robert G. Schultz, have assigned the full and exclusive right to the present application to Xybernaut Corporation, said assignment recorded in the U.S. Patent and Trademark Office on December 12, 2000 Reel/Frame: 011162/0394.

Related Appeals and Interferences

There are no related appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1, 4-5, 7-8, 10-11, 13-14, 17-19, 21, 23-25, 31 and 33-34 were Finally Rejected in the second Final Rejection, mailed June 9, 2004, (Paper No. 14) and are on appeal herewith. A correct copy of the claims on appeal is attached to this Appeal Brief as Claim Appendix. Claims 1, 4-5, 7-8, 10-11, 13-14, 17-19, 21, 23-25, 31 and 33-34 are pending and claims 2-3, 6, 20, 22, 26-30 and 32 are canceled.

The application as filed on October 2, 2000 contained claims 1-30, subsequently claims 2-3, 6, 20, 22, 26-30, and 32 were canceled and claims 31-34 were added, therefore claims 1, 4-5, 7-19, 21, 23-25 and 31-33 are on appeal herein.

Claims 1-3, 5-8, 10, 17-19, 21, and 23-28 were rejected in the First Office Action mailed April 25, 2003 under 35 U.S.C. § 103(a) as being unpatentable over Lambrecht et al (hereinafter, "Lambrecht") U.S. Patent No. 5,951,664 in view of Hansen (hereinafter, "Hansen") U.S. Patent No. 5,640,490. Claims 4, 9, 12-16, 29-30 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lamrecht in view of Hansen and in further view of well known prior art (MPEP 2144.03). Claim 11 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Lambrecht in view of Hansen and further in view of Chang et al. (hereinafter, "Chang") U.S. Patent No. 6,330,247 and still further in view of Oh et al (hereinafter, "Oh") U.S. Patent No. 6,275,806.

Claims 1-3, 5-8, 10, 17-19, 21, 23-28 and 31 were Finally Rejected in the Second Office Action mailed October 2, 2000 under 35 U.S.C. § 103(a) as being unpatentable over Lambrecht in view of Hansen. Claims 4, 9, 12-16, 29-30 were Finally Rejected under 35 U.S.C. § 103(a) as being unpatentable over Lambrecht in view of Hansen and

further in view of well known prior art (MPEP 2144.03). Claim 11 was Finally Rejected under 35 U.S.C. § 103(a) as being unpatentable over Lambrecht in view of Hansen and further in view of Chang and still further in view of Oh. Claim 32 was Finally Rejected under 35 U.S.C. § 103(a) as being unpatentable over Lambrecht in view of Hansen and further in view of Simar, Jr. et al. (hereinafter, "Simar") U.S. Patent No. 6,182,203 B1.

The final rejection of claims 1-10, 12-19, 21, 23-33 in the Second Office Action mailed October 2, 2000 were maintained in the Advisory Action mailed December 2, 2003.

The finality of the Second Office Action (October 2, 2000) was withdrawn upon filing of RCE under 37 CFR 1.114 on December 19, 2003. Claims 1, 3-5, 7-8, 10, 13-14, 17-19, 21, 23-25 and 31-34 were rejected under 35 U.S.C. § 103(a) in the Third Office Action mailed February 25, 2004 as being unpatentable over Lambrecht in view of Simar and in further view of Hansen. Claim 9, 12 and 15-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lambrecht in view of Simar in view of Hansen and in further view of well known prior art (MPEP 2144.03). Claim 11 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Lambrecht in view of Simar in view of Hansen and further in view of Oh.

Claims 1, 4-5, 7-8, 10, 13-14, 17-19, 21, 23-25, 31 and 33-34 were Finally Rejected under 35 U.S.C. § 103(a), in the Fourth Office Action or Second Final Rejection, Paper No. 14, as being unpatentable over Lambrecht in view of Simar and in further view of Hansen. Claim 11 was Finally Rejected under 35 U.S.C. § 103(a) as being unpatentable over Lambrecht in view of Simar and further in view of Oh.

Status of Amendments

There are has been no claim amendments filed subsequent to the Second Final Office Action.

Summary of the claimed subject matter

The instant invention discloses a computer motherboard architecture whereby a digital signal processor ("DSP") is co-located on the motherboard with the central processing unit ("CPU") along with typical computer components including a data bus, a power interface. The DSP is positioned between audio input pathway and the CPU such that audio input is processed first by the DSP before being sent to the CPU. The DSP is in electrical connection to a memory which stores at least a command and control speech engine.

The DSP is enabled to operate in either command and control mode or continuous speech mode. Command and control speech are words which are used to control the operating system or navigate through a specific application. Phrases such as "open window" or "scroll down" are examples of command and control speech. They are generally words chosen from a limited or sectionalized vocabulary set, where each word is tied to a specific command for the computer. The speech engine is stored in memory connected to the DSP, such that only the translated command will be sent to the CPU for execution. (Specification, page 10, line 3 - page 11, line 9.) In continuous speech mode, the DSP will take inputted speech and convert it to phonemes which will then be sent to the CPU for processing. (Specification, page 11, line 10- page 12, line 14.)

For an exemplary embodiment of the present invention refer to figure 5. Figure 5 shows a typical implementation of the on-board DSP in the context of a mobile computer system board. Element 103 is represented as a TI DSP 5000 series DSP chip. The DSP chip is integrated into the system board as a bridge such as Intel 82443MX100 N&S Bridge 105 between the audio input 101 and CODEC 102 and the CPU 108.

Communication between the DSP 103 and the parallel PCI bus 106 is facilitated by a TI PCI2040 PCI to DSP Bridge chip 104, which enables the output signals of the DSP 103 to interface with the bus 106. The CPU 108 in this example is a 600 MHz mobile Pentium ® chip manufactured by Intel Corporation. In this example, a user interface PCB 100 is shown. This includes several typical input and output interfaces such as user interface port 101, USB port 110, 1394 port 111 and display port 109. (Specification, page 18, lines 11-22.)

The typical data stream path for command and control or continuous speech processing would be as follows: Speech will enter through the analog audio input, from a standard analog microphone, which will be input through the user interface port 101. The analog audio signals will travel to the CODEC 102 where an analog to digital (A/D) converter changes it to a digital bit stream. This bit stream then travels to the DSP chip 103. The DSP 103 performs the necessary functions to "clean up" and process the speech into phonemes. If the computer is in command and control mode, the DSP 103 will use its internal speech engine to correlate the speech phonemes to an actual command. If it is in continuous mode it will merely convert the speech to phonemes. The next step is to pass the output, either a command to executed by the CPU 108 or a series of phonemes, through the data path so that it can be processed by the CPU 108. This is done by routing the output through a DSP-to-PCI bridge chip 104 which converts the output to a bitwise format which is compatible with the PCI bus 106. This output then routes through the Intel 82443MX100 105 for direct communication to the CPU 108. If it is command and control signal, then the command is executed by the CPU 108. The CPU 108 will be idle with respect to the voice processing up until this point. If it is a stream of phonemes, as

is the case with continuous speech, then the CPU 108 will invoke the voice recognition software-based speech engine to process the phonemes and convert them to text for the purposes of whatever application the speech is associated with. (Specification, page 19, lines 1-19.)

Claim 1 claims a computer motherboard architecture comprising a computer motherboard possessing typical components including a CPU, a data bus, a power interface, and an audio input data pathway. The audio input data pathway connects the audio input of the motherboard to the CPU. The motherboard also includes a DSP chip in the audio input data path, a bridge interfacing between said DSP chip and the bus on the computer motherboard, a memory in electrical connection to said DSP chip, and a command and control speech engine residing in said memory of said DSP chip. The DSP is enabled to operate in either command and control mode or continuous speech mode and the DSP serves as the preprocessor of all speech input prior to execution of instructions by the CPU to process the speech input. Also, the speech engine includes a vocabulary of speech terms enabled to be loaded into the memory which is associated with specific instructions or contextual environments. Finally, the DSP is enabled to be dynamically set by a user in either a continuous speech mode or a command and control mode.

Claim 33 claims a method of processing speech, the method comprising the steps of setting a computer in either command and control mode or continuous speech mode, inputting speech into an audio input device wherein said audio input device is electrically connected to said computer, converting said speech from an analog format to a digital signal, transmitting said digital signal to a digital signal processor, wherein said digital

signal processor is included on a motherboard of said computer and said digital signal processor is enabled to function as a preprocessor of all speech input, analyzing said digital signal with at least said digital signal processor and a speech engine residing in a memory on said motherboard and electrically connected to said digital signal processor, transmitting said analyzed digital signal of a computer command to a processor in electrical connection to said digital signal processor and said memory of said computer, transmitting said analyzed digital signal of continuous speech to a processor in electrical connection to said digital signal processor and said memory of said computer, and performing an operation or command representative of said analyzed digital signal by said processor.

Grounds of rejection to be reviewed on appeal

Claims 1, 4-5, 7-8, 10, 13-14, 17-19, 21, 23-25, 31 and 33-34 were Finally Rejected under 35 U.S.C. § 103(a) in the Second Final Rejection, Paper No. 14, as being unpatentable over Lambrecht (U.S. 5,951,664) in view of Simar (U.S. 6,182,203 B1) and in further view of Hansen (U.S. 5,640,490). Claim 11 was Finally Rejected under 35 U.S.C. § 103(a) as being unpatentable over Lambrecht (U.S. 5,951,664) in view of Simar (U.S. 6,182,203 B1) and further in view of Oh (U.S. 6,275,806).

Argument

I. Claims 1, 4-5, 7-8, 10, 13-14, 17-19, 21, 23-25, 31 and 33-34 are unobvious under 35 U.S.C. 103(a) over the combination Lambrecht in view of Simar and in further view of Hansen.

In the second Final Rejection (Final Office Action, Paper No. 14) (hereinafter, "FOA"), the Examiner argued, regarding claims 1 and 33, that Lambrecht discloses a computer system comprising a computer motherboard architecture comprising a computer motherboard possessing typical components including a CPU, a data bus, a power interface, and an audio input data pathway wherein the audio input data pathway is connected to the audio input of the motherboard to the CPU (FOA, page 4). For support of this contention, the Examiner relies upon Fig. 4 and column 11, lines 39-44 of Lambrecht. The Examiner also argues that Lambrecht discloses a DSP chip in the audio input pathway and relies upon Fig. 15 and column 8, lines 56-59 in Lambrecht for support (FOA, page 5). Further, the Examiner argues that Lambrecht discloses a bridge interfacing between the DSP chip and the bus on the computer motherboard and relies upon Fig. 1 and column 8, lines 23-30 and a memory in electrical connection to said DSP chip and relies upon column 11, line 43, column 21, line 3, column 23, lines 5-6 and 23, and Figs. 15 and 17 for support (FOA, page 4-5).

The Examiner states that Lambrecht does not disclose a command and control speech engine residing in the memory of the DSP, a DSP that serves as the preprocessor of all speech input prior to execution of instructions by the CPU to process speech input, and a speech engine which includes a vocabulary of speech terms enabled to be loaded into the memory which are associated with specific instructions or contextual

environments (FOA, page 5). The Examiner attempts to remedy the deficiencies of Lambrecht by using Simar. The Examiner states that Simar teaches "a command and control speech engine residing in said memory of said DSP chip" and "said DSP serves as the preprocessor of all speech input prior to execution of instructions by the CPU to process the speech input" and "wherein said speech engine includes a vocabulary of speech terms enabled to be loaded into said memory which are associated with specific instructions or contextual environments" (FOA, page 5). The Examiner then argues that it would be obvious to combine the two references for the purpose of handling real-time applications such as speech recognition (FOA, page 6). The Examiner also states that Lambrecht in view of Simar does not disclose that the DSP is enabled to operate in either command and control mode or continuous speech mode and attempts to remedy this by applying Hansen and arguing that it would have been obvious to combine Hansen for the purpose of offering more computer real-time applications such as speech recognition and combining speech recognition into other applications such as word processor documents (FOA, page 7).

The Examiner's final rejection of claims 1, 4-5, 7-8, 10, 13-14, 17-19, 21, 23-25, 31 and 33-34 under 35 U.S.C. 103(a) as being obvious over the combination of Lambrecht in view of Simar and in further view of Hansen should be reversed. First, by combining Simar and Hansen in the manner suggested by the Examiner with the teachings of Lambrecht would change the principle of operation of Lambrecht and would therefore provide no motivation to combine the references. Without a proper motivation, the Examiner has not established a *prima facie* case of obviousness. Second, by combining Simar and Hansen in the manner suggested by the Examiner with the

teachings of Lambrecht would render Lambrecht unsatisfactory for its intended purpose. Third, the prior art and not the Examiner must suggest the desirability of combining Simar and Hansen with the teachings of Lambrecht in order to establish a *prima facie* case of obviousness.

A. The combination of Simar and Hansen would change the principle of operation of Lambrecht.

The suggested combination of Lambrecht and Simar would require a substantial reconstruction and redesign of the elements shown in Lambrecht as well as a change in the basic principle under which the Lambrecht construction was designed to operate. Thus, there is no motivation to combine Simar with Lambrecht. Accordingly, since there is not motivation to combine the references, the Examiner has failed to establish a *prima facie* case of obviousness for the claimed invention.

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 U.S.P.Q. 349 (C.C.P.A. 1959).

In *In re Ratti*, a decision by the Board of Appeals of the United States Patent Office was appealed by Ratti for claims in a patent application for an oil seal for sealing the space between a bore in a housing and a relatively movable shaft centrally located in the bore. *Id.* at 810, 123 U.S.P.Q. at 349. The independent claim in question claimed "[a] seal for insertion in a cylindrical bore in a housing...comprising an annular bore-

engaging mounting portion of resiliently deformable material." *Id.* at 810-811, 123 U.S.P.Q. at 350. The examiner relied upon two patents in the rejection. The primary patent taught a shaft sealing element that was deformable, but incompressible. *Id.* at 811-812, 123 U.S.P.Q. at 350. Since the incompressible material described in the primary reference would not function in the manner of Ratti's seal, the examiner added a secondary reference to teach a set of spring fingers to increase the resilient deformation of the primary reference's seal. *Id.* at 812-813, 123 U.S.P.Q. at 350-351. The court argued that the incompressible nature of the rubber in the sealing element of the primary reference could not function in the manner of appellant's seal and the spring fingers of the secondary reference could not increase the resilient deformation of the primary reference's seal. *Id.* at 813, 123 U.S.P.Q. at 351-352. Therefore, the court reversed the rejection holding the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." *Id.* at 813, 123 U.S.P.Q. at 352.

Similary, the combination of Simar with the teachings of Lambrecht as alleged by the Examiner would require substantial reconstruction and redesign of Lambrecht. Lambrecht teaches that when an application is executed on the CPU, multimedia data is generated and is transferred or written by the CPU to main memory. Lambrecht, column 24, lines 12-16. Once real-time or multimedia data and commands have been placed in the multimedia memory by the CPU, one or more of the multimedia devices reads the commands and data from the multimedia memory and performs the necessary graphics and audio processing functions. Lambrecht, column 25, lines 3-9. Therefore, the

computer system of Lambrecht only operates when the CPU provides real-time or multimedia data and commands to main memory, and only then does the multimedia devices with the optional DSP read the data and commands from memory and perform their necessary functions. Lambrecht, Fig. 2; column 8, lines 50-61.

The Examiner admits that Lambrecht does not teach the limitations of claim 1:

> a command and control speech engine residing in said memory of said DSP chip; wherein said DSP is enabled to operate in either command and control mode or continuous speech mode and said DSP serves as the preprocessor of all speech input prior to execution of instructions by the CPU to process the speech input and wherein said speech engine includes a vocabulary of speech terms enabled to be loaded into said memory which are associated with specific instructions or contextual environments, and further wherein said DSP is enabled to be dynamically set by a user in either a continuous speech mode or a command and control mode

(FOA, pages 5-6.)

The Examiner attempted to combine the automatic speech recognition system of Simar to meet the claim limitation "...said DSP serves as the preprocessor of all speech input prior to execution of instructions by the CPU to process the speech input..." as claimed in claim 1. The speech recognition system of Simar (Fig. 97; column 92, line 64-column 93, line 23) requires a plurality of discrete devices (items 703, 705, 707, 709, 739 of Fig. 97 in combination with item 11 of Fig. 1) to process speech before being outputted to an output device, such as a loudspeaker (item 719 of Fig. 97).

Specifically, Simar teaches, in one embodiment, a computer system including a host computer 631 which supplies data input to a first device 11 operating as a DSP microprocessor 653. Control, address and data information are supplied by two-way communication paths between DSP 653 and a second device 11 operating as a GSP (graphics signal processor) 655. Simar, Fig. 96, column 92, lines 46-52. In another

embodiment, Simar teaches an automatic speech recognition system including a microphone 701, a sample-and-hold circuit 703, and an A/D circuit 705. The system also includes an interrupt-driven fast Fourier transform processor 707 utilizing device 11 and a speech recognition DSP 709 incorporating a further device 11. Simar, Fig. 97, column 92, line 64 – column 93, line 10.

The combination of Lambrecht and Simar as proposed by the Examiner would function as follows. First, the automatic speech recognition system of Simar as described above would be first to operate. (FOA, page 6.) Speech would pass through Simar's multiple devices including microphone 701, sample and hold circuit 703, and an A/D circuit 705, fast Fourier transform processor 707, and a speech recognition DSP 709. (FOA, page 6.) Then the Examiner's proposes that the output from the speech recognition DSP 709 described within a separate device would be inputted into Lambrechts's computer system. (FOA, page 6.)

As per the references used in the rejection of claim 1, the portion of Simar that the Examiner relies upon for his rejection, speech is processed using discrete devices such as a device based upon a Fourier transform processor 707 and another device including speech recognition DSP 709. Simar, column 93, lines 1-10. Output from the DSP 709 is supplied to system bus 711 and then to devices such as speech synthesizer 717 and speaker 719. In order for Simar to be combined with Lambrecht, the data from Simar's system bus 711 would need to be routed to the real-time (multimedia) bus 130 of Lambrecht. However, according to Lambrecht, the CPU is required to transfer multimedia data to main memory and then the multimedia device reads the commands from memory before performing graphics and audio processing functions. Lambrecht,

column 25 lines 3-9. Thus, Lambrecht would require substantial reconstruction and redesign by adding the speech processing of Simar.

Therefore, there would be no way to combine Simar's invention with that of Lambrecht without changing the operation of Lambrecht because Lambrecht requires the CPU to do the initial speech processing. Since the suggested combination of Lambrecht and Simar would require a substantial reconstruction and redesign of the elements shown in Lambrecht as well as a change in the basic principle under which the Lambrecht construction was designed to operate, then there is no motivation to combine Simar with Lambrecht. Accordingly, since there is no motivation to combine the references, the references do not establish a *prima facie* case of obviousness for the claimed invention.

Further, the addition of Hansen to the Lambrecht and Simar combination does not correct the problems described above by combining the teachings of Simar with Lambrecht. There is nothing in Hansen's disclosure to allow the proposed modification of Lambrecht, as discussed above, with the teachings of Simar to operate in the manner claimed in claim 1. Since the combination of Lambrecht with Simar is improper, then the combination of Lambrecht with Simar and Hansen is also improper and do not render claim 1 *prima facie* obvious.

B. <u>The proposed modification by the Examiner of Lambrecht with that of Simar would render Lambrecht unsatisfactory for its intended purpose</u>

The suggested combination of Simar with Lambrecht would render Lambrecht unsatisfactory for its intended purpose. Thus, there is no motivation to combine Simar

with Lambrecht. Accordingly, since there is not motivation to combine the references, the Examiner has failed to establish a *prima facie* case of obviousness for the claimed invention.

If proposed modification would render the prior art unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 U.S.P.Q. 1125 (Fed. Cir. 1984).

In *In re Gordon*, a decision by the Board of Appeals of the United States Patent Office was appealed by Gordon for claims in a patent application for a blood filter assembly. *Id.* at 900, 221 U.S.P.Q. at 1126. The blood filter assembly of Gordon permits both entry of the blood into, and ultimate discharge of the blood out of, the bottom end of the filter assembly. *Id.* at 901, 221 U.S.P.Q. at 1126. The sole reference relied upon by the Examiner was a patent which discloses a liquid strainer for removing dirt and water from gasoline and other light oils. *Id.* at 901, 221 U.S.P.Q. at 1127. This patent had both the inlet and outlet located at the top of the device. *Id.* at 901, 221 U.S.P.Q. at 1127. The Board had affirmed the obviousness rejection by the Examiner by explaining that it would have been obvious to turn the prior art device upside down to have both the inlet and outlet at the bottom. *Id.* at 902, 221 U.S.P.Q. at 1127. The court reversed the rejection holding finding that if the prior art device was turned upside down it would be inoperable for its intended purpose because the gasoline to be filtered would be trapped at the top, the water and heavier oils sought to be separated would flow out of the outlet instead of the purified gasoline, and the screen would become clogged. *Id.* at 902, 221 U.S.P.Q. at 1127.

Likewise, the modification of Lambrecht with Simar would render Lambrecht unsatisfactory for its intended purpose. The computer system of Lambrecht is only described as operating utilizing the CPU prior to any action by the DSP. Lambrcht, column 8, lines 50-61. Lambrecht states that the computer system whereby the CPU arbitrates usage of the real-time (multimedia) bus 130 to communicate data between the multimedia devices, which may contain a DSP, will provide greater performance for real-time applications. Lambrecht, column 2, line 64-column 3, line 5. Therefore, by adding the multiple processing components of Simar utilizing discrete signal processors as described in Fig. 97 and explained above would render Lambrecht unsatisfactory for its intended purpose of utilizing the CPU and not the DSP perform the speech processing. Since the modification of Lambrect by the addition of Simar as argued by the Examiner renders Lambrecht unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.

Further, the addition of Hansen to the Lambrecht and Simar combination does not correct the problems described above by combining the teachings of Simar with Lambrecht. There is nothing in Hansen's disclosure to allow the proposed modification of Lambrecht, as discussed above, with the teachings of Simar to operate in the manner claimed in claim 1. Since the combination of Lambrecht with Simar is improper, then the combination of Lambrecht with Simar and Hansen is also improper and do not render claim 1 *prima facie* obvious.

C. The prior art must suggest the desirability of the claimed invention

Neither Lambrecht nor Simar suggest the desirability of the alleged combination. Thus, there is no motivation to combine Simar with Lambrecht. Accordingly, since there is not motivation to combine the references, the Examiner has failed to establish a *prima facie* case of obviousness for the claimed invention.

The prior art must suggest the desirability of the claimed invention. *In re Rouffet*, 149 F.3d 1350, 47 U.S.P.Q.2d. 1453. In *In re Rouffet*, a decision by the Board of Appeals of the United States Patent Office was appealed by Rouffet for claims in a patent application for satellite technology to reduce the number of necessary "handovers" between beams transmitted by a single satellite. *Id.* at 1353, 47 U.S.P.Q.2d at 1454-1455. The Examiner primarily relied upon three references to render obvious the Rouffet's claimed invention. The court reversed the Board's decision stating that although the combination of prior art taught every element of the claimed invention, without a motivation to combine, a rejection based on *prima facie* case of obvious was held improper. *Id.* at 1357, 47 U.S.P.Q.2d at 1457.

In the second Final Rejection, the Examiner argues that "...in Lambrecht's invention, the DSP is not limited to only work as a slave to the CPU, at all." (page 3, lines 1-2 of Paper No. 14) First, by this statement the Examiner is stating that, in the invention of Lambrecht, the DSP is only described as working as a slave to the CPU which is contrary to what is claimed in claim 1. Second, the Examiner alleges that the DSP is not limited to work as a slave to the DSP, but does not point to support in the cited references or in the prior art. This allegation is not enough to establish a *prima facie* case of obviousness. It is not enough that the Examiner makes an unsupported

allegation about the prior art, the prior art, itself, must suggest the desirability of the claimed invention.

Moreover, the Examiner does not explain how the data is properly handled in the transition between the automatic speech recognition system of Simar and the computer system of Lambrecht. Also, the Examiner has not described how the speech recognition system of Simar which is described utilizing multiple devices can be incorporated onto the motherboard of Lambrcht. Since the presently claimed invention incorporates a DSP, CPU and other components onto a single motherboard, it is critical that the Examiner explain how the inventions of Lambrecht and Simar can be combined to meet the limitations of claim 1. Again, without such a teaching in the prior art, the claims cannot be *prima facie* obvious.

Although, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference, but what the combined teachings would have suggested to those of ordinary skill in the art. In this case, one of ordinary skill in the art would not have been motivated to combine the speech processing of Simar utilizing separate speech processing components to output synthesized speech and Lambrecht utilizing a CPU/DSP combination that has the CPU performing the primary processing functions to arrive at the presently claimed invention. Therefore, the teaching of the references are not sufficient to render the claims *prima facie* obvious.

D. Dependent claims 4-5, 7-8, 10, 13-14, 17-19, 21, 23-25, 31 and 34 are unobvious since independent claims 1 and 33 are unobvious

Claims 4-5, 7-8, 10, 13-14, 17-19, 21, 23-25 and 31 depend from claim 1 and claim 34 depends from claim 33 and, thus, incorporates the elements of those independent claims. Accordingly, for at least the reasons mentioned above, the combination of Lambrecht, Simar and Hansen fails to support a *prima facie* case of obviousness for claims 4-5, 7-8, 10, 13-14, 17-19, 21, 23-25, 31 and 34 because the combination of Lambrecht, Simar and Hansen fails to motivate all the elements incorporated in claims 4-5, 7-8, 10, 13-14, 17-19, 21, 23-25, 31 and 34. For at least this reason, the rejection of claims 4-5, 7-8, 10, 13-14, 17-19, 21, 23-25, 31 and 34 under section 103(a) is improper and should be withdrawn.

E. Conclusion

The Board should reverse the Examiner's holding that claims 1, 4-5, 7-8, 10, 13-14, 17-19, 21, 23-25, 31 and 33-34 are obvious under 35 U.S.C. 103(a) over the combination Lambrecht in view of Simar and in further view of Hansen. First, by combining Simar and Hansen, as the Examiner has proposed, with Lambrecht would change the principle of operation of Lambrecht. Second, Lambrecht would be rendered unsatisfactory for its intended purpose by combining the teachings of Simar and Hansen. Third, the prior art and not the Examiner should suggest the desirability of the claimed invention. Given each of the above reasons, the Examiner as not established a *prima facie* case of obviousness and therefore the rejection should be reversed.

Respectfully submitted,

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Claim Appendix

Claim 1 (on appeal) A computer motherboard architecture comprising:

a computer motherboard possessing typical components including a CPU, a data bus, a power interface, and an audio input data pathway, said audio input data pathway connecting the audio input of the motherboard to the CPU;

a DSP chip in the audio input data path;

a bridge interfacing between said DSP chip and the bus on the computer motherboard;

a memory in electrical connection to said DSP chip;

a command and control speech engine residing in said memory of said DSP chip;

wherein said DSP is enabled to operate in either command and control mode or continuous speech mode and said DSP serves as the preprocessor of all speech input prior to execution of instructions by the CPU to process the speech input and wherein said speech engine includes a vocabulary of speech terms enabled to be loaded into said memory which are associated with specific instructions or contextual environments, and further wherein said DSP is enabled to be dynamically set by a user in either a continuous speech mode or a command and control mode.

Claim 4 (on appeal) A computer motherboard architecture according to claim 1 wherein said audio input data pathway comprises a microphone input, means for digitizing an audio input data pathway, and a DSP chip, bridge chip communicating with said bus.

Claim 5 (on appeal) A computer motherboard architecture according to claim 1 wherein said DSP chip is operable to convert said audio input into phonemes.

Claim 7 (on appeal) A computer motherboard architecture according to claim 1 wherein said vocabulary of speech terms resides in said memory in electrical connection to said DSP chip.

Claim 8 (on appeal) A computer motherboard architecture according to claim 1 wherein said vocabulary of speech terms is able to be defined by a user, either in a static or active mode.

Claim 9 (on appeal) A computer motherboard architecture according to claim 1 wherein said vocabulary of speech terms is refreshed by the CPU based upon the context of an application running on a host processor.

Claim 10 (on appeal) A computer motherboard architecture according to claim 1 wherein said DSP chip is operable to perform preprocessing for a software-based speech engine residing elsewhere on a computer.

Claim 11 (on appeal) A computer motherboard architecture according to claim 1 wherein said DSP chip is operable to perform menu selection including mobile phone audio functions comprising voice activated dialing, voice control, noise cancellation, and speech to signal conversion.

Claim 12 (on appeal) A computer motherboard architecture according to claim 1 wherein said DSP chip is enabled to perform noise cancellation functions.

Claim 13 (on appeal) A computer motherboard architecture according to claim 1 wherein said DSP chip is enabled to function in a command and control speech mode.

Claim 14 (on appeal) A computer motherboard architecture according to claim 1 wherein said DSP chip is enabled to function in a continuous speech mode.

Claim 15 (on appeal) A computer motherboard architecture according to claim 1 wherein said DSP chip is enabled to function in a mobile phone mode.

Claim 16 (on appeal) A computer motherboard architecture according to claim 1 wherein said DSP is enabled to function in a language translation mode.

Claim 17 (on appeal) A computer motherboard architecture according to claim 1 wherein said computer motherboard is a user-supported computer motherboard.

Claim 18 (on appeal) A computer motherboard architecture according to claim 17 wherein said user-supported computer is a voice activated user-supported computer.

Claim 19 (on appeal) A computer motherboard architecture according to claim 1 wherein said computer motherboard is a portable computer motherboard.

Claim 21 (on appeal) A computer motherboard architecture according to claim 1 wherein said computer motherboard is a desktop computer motherboard.

Claim 23 (on appeal) A computer motherboard architecture according to claim 1 wherein said computer motherboard is a video gaming system computer motherboard.

Claim 24 (on appeal) A computer motherboard architecture according to claim 1 wherein said computer motherboard is a computing and communications device computer motherboard.

Claim 25 (on appeal) A computer motherboard architecture of claim 1 wherein said computer motherboard is a component of a member selected from the group consisting of user supported computers, laptop computer, desktop computers, portable computers and mixtures thereof.

Claim 31 (on appeal) A computer motherboard architecture according to claim 1 wherein when said DSP is operating in command and control mode said DSP is operable to accommodate full interpreting and processing of said speech without said CPU being utilized.

Claim 33 (on appeal) A method of processing speech, the method comprising the steps of:

setting a computer in either command and control mode or continuous speech mode,

inputting speech into an audio input device wherein said audio input device is electrically connected to said computer,

converting said speech from an analog format to a digital signal,

transmitting said digital signal to a digital signal processor, wherein said digital signal processor is included on a motherboard of said computer and said digital signal processor is enabled to function as a preprocessor of all speech input,

analyzing said digital signal with at least said digital signal processor and a speech engine residing in a memory on said motherboard and electrically connected to said digital signal processor,

transmitting said analyzed digital signal of a computer command to a processor in electrical connection to said digital signal processor and said memory of said computer,

transmitting said analyzed digital signal of continuous speech to a processor in electrical connection to said digital signal processor and said memory of said computer,

performing an operation or command representative of said analyzed digital signal by said processor.

Claim 34 (on appeal) The method of claim 33, after said step of analyzing, further comprising the step loading an appropriate vocabulary into said speech engine depending on the context of the operation being performed by a user.

Evidence Appendix

None

Related proceedings appendix

None

CERTIFICATE OF MAILING BY "EXPRESS MAIL" (37 CFR 1.10) Applicant(s): XYBERNAUT CORPORATION			Docket No. X2009A	
Application No. 09/677,569	Filing Date 10/2/00	Examiner QI HAN	Customer No.	Group Art Unit 2654

Invention: COMPUTER MOTHERBOARD ARCHITECTURE WITH INTEGRATED DSP FOR CONTINUOUS AND COMMAND AND CONTROL SPEECH PROCESSING

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